

Before The  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554

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In The Matter Of )

ET Docket No. 98-153

Revision of Part 15 of the Commission's )  
Rules Regarding Ultra-Wideband )  
Transmissions Systems )

To: The Commission

**COMMENTS OF QUALCOMM INCORPORATED**

QUALCOMM Incorporated ("QUALCOMM"), by its attorneys, hereby submits its comments on the Notice of Proposed Rule Making, FCC 00-163, released May 11, 2000 ("NPRM") in this proceeding.

**I. Introduction**

QUALCOMM submits these comments because it is concerned about the potential interference from ultra-wideband ("UWB") devices to wireless phones using CDMA technology, including those wireless phones containing QUALCOMM chipsets incorporating global positioning system ("GPS") receiving capability into the wireless phones. QUALCOMM is also concerned about potential interference to phones it produces for the Globalstar system, a worldwide LEO satellite system.

As the NPRM recognizes, substantial testing and analysis of UWB technology and devices is necessary to understand the potential for this interference. See NPRM at ¶¶ 1, 7, 31. Along with many other governmental and private entities, QUALCOMM itself has not had a sufficient opportunity to complete its testing and analysis of UWB technologies and devices.

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QUALCOMM will share with the Commission a more complete technical analysis of the potential for interference from UWB devices when it is available. In the meantime, QUALCOMM urges the Commission not to act in this proceeding until it has a complete record containing reliable, suitable, and sufficient testing and analysis of the potential for interference from UWB devices.

## **II. Statement of Interest**

QUALCOMM's interest in this proceeding stems from two aspects of its business: 1) its work in developing breakthrough technology for the provision of automatic location identification ("ALI") over wireless networks by highly integrating global positioning system ("GPS") receiving capability into the chipsets for wireless handsets; and 2) its manufacturing of phones for use on the Globalstar LEO satellite system.

QUALCOMM's technology, developed both by QUALCOMM CDMA Technologies, a division of QUALCOMM, and Snap Track Inc., a wholly-owned subsidiary of QUALCOMM, will allow wireless carriers to meet or exceed the accuracy requirements applicable to wireless carriers using handset-based or hybrid solutions for enhanced 911 service through ALI, mandated in the Commission's rules. See Fourth Memorandum Opinion And Order, CC Docket No. 94-102, released September 8, 2000 ("Fourth MO&O"). Recently, on August 14, 2000, QUALCOMM announced that it had begun shipping to manufacturers of wireless handsets samples of its MSM3300 chipset and system software incorporating QUALCOMM's ALI solution. QUALCOMM's technology implementing GPS-based ALI will enable wireless carriers to make a significant contribution to the protection of life and property. As the

Commission recently reaffirmed, its wireless E911 rules “are intended to meet important public safety needs as quickly as reasonably possible.” Fourth MO&O at ¶ 17.

QUALCOMM is one of three companies worldwide producing phones for use over the Globalstar satellite system. QUALCOMM also manufactures gateways for the Globalstar system. One major use of the Globalstar system both in the United States and in other countries is to provide reliable communications service for disaster relief agencies and public safety entities. Last month, Globalstar USA, which markets Globalstar service in the United States, announced an alliance with the American Red Cross.

### **III. The Commission Should Not Adopt Rules for UWB Technology and Devices Until Testing and Analysis Has Been Completed**

The very first paragraph of the NPRM notes that comprehensive tests on UWB technology and devices “have not been completed” and that “(f)urther testing and analysis is needed before the risks of interference are completely understood.” NPRM at ¶1. The NPRM states that it is “vitally important” that critical safety systems operating in the restricted frequency bands, including GPS operations, are protected against interference.” Id. at ¶24. The NPRM goes on to note that the NTIA and the Department of Transportation are both planning tests to examine the interference potential of UWB devices; the Department of Transportation study will apparently examine potential interference to GPS receivers. Id. at ¶31. The Commission is aware that manufacturers of UWB devices and other interested parties are planning tests. Id. Nevertheless, the NPRM encourages parties to submit the test results into the record by October 30, 2000, at which time the Commission will issue a public notice to provide an opportunity for public comments and replies on the test results and analysis. Id.

QUALCOMM is concerned with the potential proliferation of UWB devices and their impact on the performance of CDMA phones both in normal and GPS modes of operation. The degree of this impact apparently will depend to a large extent on the geographical distribution of the UWB devices, their proximity to the phone, their pulse repetition frequency (PRF), modulation format, signal duty cycle, and duration of the pulse train.

QUALCOMM has developed techniques to enhance the sensitivity of GPS receivers. These techniques will enable phones equipped with GPS functionality to work under more severe shadowing conditions compared to conventional GPS receivers. QUALCOMM is concerned that the aggregate effect of many of these UWB devices will potentially harm the operation of the phones during E9-1-1 calls in the following ways:

First, the UWB devices could cause a loss of GPS signals for the wireless phones by reducing the signal-to-noise ratio of a given satellite to such an extent that the GPS receiver can no longer de-correlate the given satellite signal and hence reduces the GPS coverage.

Second, such reduction in the signal-to-noise ratio would cause higher errors in range measurements provided by the receiver. These errors will propagate through the GPS receiver position location algorithms and cause the GPS to provide incorrect positioning information.

Third, UWB signals could degrade the GPS receiver acquisition time, resulting in longer response time.

Moreover, although this has not yet been confirmed, close proximity of UWB devices to wireless phones may degrade their equivalent noise figure to the extent of rendering their operation useless, especially in marginal coverage areas. The Frequency domain analysis which has been performed so far is not sufficient to infer that the impact of UWB signals on victim

receivers is equivalent to broadband noise. No conclusion can or should be drawn before the time-domain behavior of these UWB waveforms is well understood.

The Commission should not act in this proceeding until it has a complete record containing reliable, suitable, and sufficient testing and analysis of the potential for interference from UWB devices, without regard to the October 30, 2000 target date. The GPS operations made possible by QUALCOMM's chipsets hold the potential to save lives. The same is true for QUALCOMM-produced Globalstar phones. The Commission should be very reluctant to take any action that could in any way interfere with these critical operations.

QUALCOMM, like other public and private entities as noted in the NPRM, has not yet completed its technical analysis of the potential for interference from UWB devices, but will do so as soon as it can do so. In the meantime, despite the October 30, 2000 target date for submission of test results, the Commission should not adopt rules for UWB until it has a complete record containing all of the necessary technical testing and analysis.

QUALCOMM recognizes the potential benefits of UWB technology and is not suggesting that UWB represents a threat to the licensed wireless telephony. QUALCOMM urges the Commission, however, not to modify the Part 15 rules until all of the questions regarding the impact of UWB devices on other wireless services upon which the public depends are fully and reliably answered.

Respectfully submitted,

By: \_\_\_\_\_

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Dated: September 12, 2000

**CERTIFICATE OF SERVICE**

I, Dean R. Brenner, do hereby certify that a true and correct copy of the foregoing  
"Comments of QUALCOMM Incorporated" was served by mail this 12th day of September  
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